

**PATENT COOPERATION TREATY  
PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 15 NOV 2005

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Applicant's or agent's file reference WJ504169/142	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/NZ2004/000145</b>	International filing date (day/month/year) 7 July 2004	Priority date (day/month/year) 7 July 2003	
International Patent Classification (IPC) or national classification and IPC  Int. CL. <sup>7</sup> G06F 17/30			
Applicant  SIMWORKS INTERNATIONAL LIMITED et al			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ (sent to the applicant and to the International Bureau) a total of 26 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input checked="" type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input checked="" type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 4 February 2005	Date of completion of the report 7 November 2005	8 NOV 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  <b>DALE SIVER</b> Telephone No. (02) 6283 2196	

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/NZ2004/000145

## Box No. I

## Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1 (b))
    - ☐ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
  - ☐ the international application as originally filed/furnished
  - ☒ the description:
    - pages 1,21-51 as originally filed/furnished
    - pages\* 4-20 received by this Authority on 15 August 2005 with the letter of 15 August 2005
    - pages\* 2,3 received by this Authority on 31 October 2005 with the letter of 31 October 2005
  - ☒ the claims:
    - pages as originally filed/furnished
    - pages\* as amended (together with any statement) under Article 19
    - pages\* 52-58 received by this Authority on 31 October 2005 with the letter of 31 October 2005
    - pages\* received by this Authority on with the letter of
  - ☒ the drawings:
    - pages 1-10,11A,11B as originally filed/furnished
    - pages\* received by this Authority on with the letter of
    - pages\* received by this Authority on with the letter of
  - ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
  - ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to the sequence listing (*specify*):

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:

☐ complied with.

☒ not complied with for the following reasons:

Claims 1, 30 as presently defined are to searching for network users known to a selected user, and providing the information to a user or storing the user identifiers.

Claim 14 is a method of maintaining relationships between users of a network system (and searching for characteristics of the user)

Claim 16 is directed to maintaining relationships between a subset of users of a network system (and detecting a change).

Claim 19 is directed to connection data where associating a user preferred identifier (alias or pseudonym).

Claim 21 is directed to connection data with popularity indications.

Claim 22 is directed to connection data with permissions.

The claims lack unity "a posteriori" in light of D1, D10 or D11 because of the broadening of the claims in Chapter II.

There was no invitation due to time remaining to establish IPRP (Chapter II).

4. Consequently, this report has been established in respect of the following parts of the international application:

☐ all parts.

☒ the parts relating to claims Nos. 1- 13,30

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/NZ2004/000145

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims 1-13,30	YES
	Claims	NO
Inventive step (IS)	Claims	YES
	Claims 1-13,30	NO
Industrial applicability (IA)	Claims 1-13,30	YES
	Claims	NO

## 2. Citations and explanations (Rule 70.7)

- D1 US 6073138 (de l'Etraz et al.) 6 June 2000
- D2 US 2002065828 (GOODSPEED) 30 May 2002
- D3 WO 2002/103570 (PROCTOR AND GAMBLE) 27 December 2002
- D4 US 5870744 (SPRAGUE) 9 February 1999
- D5 WO 2001/097088 (ORION'S BELT, INC.) 20 December 2001
- D6 WO 1999/067726 (ERICSSON) 29 December 1999
- D7 WO 2003/017139 (MOTOROLA) 27 February 2003
- D8 WO 2002/095630 (EVOLVING SYSTEMS, INC.) 28 November 2002
- D9 WO 2001/027813 (FREWORKS.COM INC.) 19 April 2001

### NEW CITATIONS

- D10 WO 2004/029838 A1 (INTERFACE SOFTWARE, INC.) 8 April 2004 (See Box VI)
- D11 WO 2001/059655 A2 (HALLMARK CARDS, INCORPORATED) 16 August 2001

### Novelty (N)

D1 discloses determining relationships between users of a network. A search maybe based on a common attribute. The common attribute may be a telephone number (from a plurality of such numbers) or degree of familiarity. The result is the choice of an "optimal contact pathway" or best person to contact and his/her contact details. There is a disclosure of these individuals being users of a network system". In column 15 lines 20-40 an electronic version of the contact intelligence data mining tool accesses applications such as Microsoft Outlook and Lotus Organizer. Outlook is a personal organizer (with an electronic contacts address book) and allows emails to be organized. Organizer is also a personal organizer (with address book, including telephone numbers) that allows storing of WEB addresses and userid/password pairs along with other personal network identifiers. Organizer allows users of a communications network to dial telephone numbers or access particular websites. Column 25 line 5 of D1 explicitly mentions connecting the computers and users by a network.

Claim 1 defines searching user's connection data for a predetermined user's identifier. The database is described in numerous locations, and the application program is an embodiment for "data mining" the public corporate contact database. In D1 the data mining involves extracting information from the public database and populating an associated private database. The common fields (fields common to both databases) include both connection information and unique user identifiers. The searching of both databases for associations and (therefore relationships) appears in numerous places (including the claims of D1). The present invention "determines relationships between users of a network system". There are numerous disclosures in D1 of using the system to answer the question who knows who ?(see column 22 lines 64 to column 23 lines 35, column 24 lines 53-59 and the claims). D1 does not explicitly disclose "providing data from the data set of step e) to the predetermined user. Hence claim 1 is novel in light of D1.

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/NZ2004/000145

## Box No. VI Certain documents cited

### 1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date ( valid claim) (day/month/year)
WO2004/029838	8 April 2004	30 September 2003	30 September 2002
US 6820083	16 November 2004	19 April 2000	30 September 2002
AU2003275375	19 April 2004	30 September 2003	30 September 2002

[D10] WO 2004/029838 discloses all of the features of claims 1,31 explicitly. This new citation is category P,X and hence may be relevant in certain national states. For example US 6820083 or AU2003275375 could be relevant to the novelty of at least claim 1,30 in the respective national states.

[D10] discloses a Relationship Management System determining contact pathways in a contact relational database. The citation explicitly discloses populating a database containing a unique network user identifier (see page 6 section [0028] for example). The relationship management system explicitly discloses searching for a specified contact (see claims). The contacts (and relationships) all have unique network identifiers (see figures 4 and 5 and associated text in sections [0039] to [0043]). In D10 the unique identifier is called a contact ID and can be searched directly to find out who knows who from the database (see Figure 3). It is clear that by searching the data set of connection data according to D10 the software can determine relationships between users of a network system. More particularly one could use the system of D10 to find out who knows a particular network user, and which particular connections link those users.

### 2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure  
(day/month/year)

Date of written disclosure  
referring to non-written disclosure  
(day/month/year)

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

**Inventive step (IS)**

D1 discloses a contact intelligence data mining tool for storing, processing and displaying and printing relational patterns between entities. Claim 1 lacks an inventive step when D1 is combined with common general knowledge in the art of network user identification (eg. telephone directory search systems). Furthermore D11 discloses a reciprocal, maintenance free community membership data management system based on user identification. The address book for each user (for example see figure 7) contains names, addresses, phone number and email address. When D1 is combined with D11 claim 1 lacks an inventive step, since the automatic updating of the users address book is explicitly disclosed in D11.

All of the remaining claims 2-13,30 add features that are well known in the art, or are explicitly disclosed in one or more of the citations D1-D9 or D11. These claims do not satisfy PCT requirements for inventive step when considered in light of the combination of D1 or D11 with one or more of D2-D9, the combinations being obvious to a person skilled in the art.

The present claims now lack unity (a posteriori) because of the broadening of the claims (in view of any of the citations already mentioned in the ISR and common general knowledge) because of the removal of the special technical feature "inbound connection set".

**Industrial applicability (IA)**

This application satisfies the PCT rules in relation to this criterion.

number of opportunities for the operators' of network systems since improving the quality and quantity of relationships/connections between users has significant possibilities for increased use of the network systems, or more efficient use, leading to increased operational revenues. Accordingly, there is a need for the determination, creation or maintenance of relationships between users of network systems.

#### **Object**

It is an object of the present invention to provide a system or method for determining, creating or maintaining relationships between users of a network system, or to provide a system or method which will at least provide the public with a useful alternative.

#### **SUMMARY OF THE INVENTION**

In one aspect the invention may broadly be said to consist in a method for determining one or more relationships between a plurality of users of a network system, the method including the steps of:

- a) populating a database with a unique network user identifier for each of the plurality of users,
- b) selecting a user and further populating the database with connection data for the selected user to provide unique network user identifiers of users known to the selected user,
- c) repeating step b) for the remainder of the plurality of users,
- d) for a predetermined user, searching each of the plurality of user's connection data in the database for the predetermined user's unique network user identifier to identify all users that have the predetermined user's unique network user identifier in their connection data,
- e) storing the network user identifiers located by the search of step d)(whether transiently or permanently) to provide a set of data for the predetermined user representative of one or more other user's relationship with the predetermined user, and
- f) providing data from the data set of step e) to the predetermined user.

Typically the step of populating the database with connection data for each user will be accomplished by accessing the connection data stored on the users' network access devices. The connection data stored on a user's network access device (NAD) would also include connection data that while not physically stored on the NAD is still accessible to the user of the NAD or to applications present on the NAD, whether by some

communications means, external storage or otherwise.

Preferably users may specify that certain user identifiers within their connection data not be accessible to other users of the network system or be included in any processing of data undertaken by the present invention. User identifiers so specified are "Blacklisted".

Preferably a predetermined user may specify additional user identifiers that relate to the predetermined user to be associated with the predetermined user's unique user identifier. Such additional user identifiers may relate to the given network system or to any other network system. It is not necessary that the network system to which a given additional user identifier relates be interconnected with the given network system.

Preferably the record of a predetermined user's connection data in the database will be kept synchronised with the connection data stored in the predetermined user's NAD such that any changes to the connection data, whether originating on the NAD or on the database and whether initiated through interaction with the present invention or independently by the predetermined user, will be communicated from one to the other. Therefore, all processing of connection data undertaken by the present invention uses current and correct data.

Preferably, the step of searching the connection data stored in the database in respect of a predetermined user's unique user identifier may be performed for each user in the database. This may also include searching the connection data stored in the database for any additional user identifiers associated with the predetermined user.

Preferably, the step of searching the connection data stored in the database in respect of a predetermined user's unique user identifier or additional user identifiers may include searching the connection data stored in other databases connected to the first database. Searching of such other databases could either be carried out directly by communication between the first database and such other databases or could be carried out by communication between the first database and a centralised database and processing centre which replicates the data contained in the databases connected to it.



with the user identifiers comprised in the connection data for the predetermined user, and the user identifiers in the data set of step e) that do not comprise part of the connection data for the predetermined user be provided to the predetermined user.

5 Preferably, the user identifiers comprised in the data set of step e) may be compared with the user identifiers comprised in the connection data for the predetermined user, and some or all of the user identifiers in the data set of step e) that are not also present in the predetermined user's connection data may be selected by the predetermined user for automatic insertion into the connection data in the predetermined user's NAD.

10 Alternatively, the user identifiers comprised in the data set of step e) may be compared with the user identifiers comprised in the connection data for the predetermined user, and the user identifiers comprised in the connection data which do not also comprise part of the data set of step e) provided to the predetermined user.

15 Preferably, the user identifiers comprised in the connection data of the predetermined user may be compared with the user identifiers comprised in the data set of step e), and the user identifiers comprised in the connection data which are not also present in the data set of step e) may be used to contact users whose user identifier appears in the connection data but not in the data set of step e) to invite them to include the  
20 predetermined user's user identifier in their connection data.

25 Preferably the predetermined user may choose which if any of the users identified in the preceding paragraph are invited to include the predetermined user's user identifier in their connection data.

30 Preferably users contacted in accordance with the preceding paragraph will have a NAD with an application present on it that will automatically intercept such communications and manage insertion of the predetermined user's user identifier into the connection data stored on the user's NAD, should the applicable user accept the predetermined user's invitation.

35 Preferably, the size of the data set of step e) may be used to provide an indication of the relative popularity of a user of the network system.

Preferably, the aggregate connection data of users of a given network system may be

used to determine the popularity of users of an interconnected network system with the users of the given network system. Such a determination may be provided to the operator of the given network system or communicated to the users of the interconnected network system.

Preferably, if the user identifier for the predetermined user should change, the users comprised in the data set of step e) may be contacted, informing them of the change in the predetermined user's user identifier and providing them with the opportunity to update their record of the predetermined user's user identifier in their connection data.

Alternatively, if the user identifier for the predetermined user should change, instructions may be communicated to an application present on the NAD of each user comprised in the data set of step e) such that the record of the predetermined user's user identifier in the connection data on each NAD is updated automatically for each such user.

Preferably the predetermined user may choose which if any of the users identified in the preceding paragraphs are invited or otherwise contacted in relation to updating their record of the predetermined user's unique user identifier in the connection data stored on their NAD.

Preferably, if a predetermined user permanently leaves the network system for any reason then each user comprised in the data set of step e) may be contacted, informing them that the predetermined user's user identifier is no longer active and providing them with the opportunity to remove the predetermined user's user identifier from their connection data.

Alternatively, if a predetermined user permanently leaves the network system for any reason instructions may be sent to the NAD of each user comprised in the data set of step e), such that the record of the predetermined user's user identifier in the connection data stored in the NAD is deleted for each such user.

Preferably the predetermined user may choose which if any of the users comprised in the data set of step e) are contacted in relation to the deletion of the applicable user identifier of the predetermined user from the connection data stored in their NAD.

Preferably a user may record user identifiers that they have used previously that are presently inactive or which have been reallocated to another user of the network system

on a list of inactive user identifiers for that user.

Preferably, if the user identifier for a predetermined user should change then the old user identifier will be included on the list of inactive user identifiers for that user.

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Preferably the step of populating the database for each user will determine if any of the user identifiers in the predetermined user's connection data are no longer active by reference to a list of known inactive user identifiers and provide the predetermined user with the opportunity to remove such inactive user identifiers from the connection data stored in the predetermined user's NAD.

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Alternatively, the step of populating the database for each user will determine if any of the user identifiers in the predetermined user's connection data are no longer active by reference to a list of known inactive user identifiers and send instructions to an application on the predetermined user's NAD to remove the inactive user identifier's from the connection data stored in the predetermined user's NAD.

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Alternatively, the step of populating the database for each user and determining if any of the user identifiers in the predetermined user's connection data are no longer active will also determine, in the event that an inactive user identifier is identified, whether an alternative active user identifier is available and if so provide the predetermined user with the opportunity to substitute the active user identifier for the inactive user identifier in the connection data stored on their NAD.

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Typically users associate a name or identifier with each of the user identifiers that comprise the user's connection data.

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Preferably users may associate a preferred name or identifier with their own user identifier.

30

Preferably the name or identifier associated with a predetermined user's user identifier in the connection data for each user comprised in the data set of step e) may be compared with the predetermined user's preferred name or identifier and any of the users comprised in the data set of step e) that do not use the predetermined user's preferred name or identifier in their connection data contacted to invite them to associate the predetermined user's preferred name or identifier with the predetermined user's user identifier in the

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connection data stored on their NAD.

Preferably the predetermined user may choose which if any of the users identified in the preceding paragraph are invited to use the predetermined user's preferred name or identifier in the connection data stored on their NAD.

Preferably users contacted in accordance with the two preceding paragraphs will have a NAD with an application present on it that will automatically intercept such invitations and assist, should the user wish to accept the predetermined user's invitation, in the process of changing the name or identifier associated with the predetermined user's user identifier in the user's connection data to be the name or identifier preferred by the predetermined user.

Preferably a predetermined user may request that the preferred name or identifier corresponding to a user identifier present in the predetermined user's connection data be provided to the predetermined user.

Preferably a predetermined user making a request in accordance with the preceding paragraph will have a NAD with an application present on it that will automatically intercept responses to such requests and assist in the process of changing the name or identifier associated with a user identifier in the predetermined user's connection data to the preferred name or identifier provided to the predetermined user.

Preferably, the record for each user in the database is further populated with one or more characteristics of each user. Characteristics may include the name and occupation of each user.

Preferably, the record for each user in the database may be searched for one or more such characteristics to determine which users possess the characteristic or characteristics.

Alternatively, the connection data of users in the database may be searched for a given user identifier to determine which users have a connection to the user associated with the given user identifier.

Preferably the record in the database for each user comprised in the predetermined user's

connection data may be searched for at least one of the characteristics to determine which, if any, of the predetermined user's contacts possess the applicable characteristic.

5 Preferably the record in the database for each user comprised in the connection data of each user comprised in the predetermined user's connection data may be searched for at least one of the characteristics or for a given user identifier to determine if any of the contacts of the predetermined user's contacts possess the applicable characteristic or is the user associated with the given user identifier. This search may be extended deeper into the relationship hierarchy to users who have only a very remote relationship to those  
10 comprised in the predetermined user's connection data.

15 Preferably the results of any search for a given characteristic within a predetermined user's connection data or the results of any search for a given characteristic or a given user identifier within the connection data of each user comprised in the predetermined user's connection data pursuant to the foregoing paragraphs may be provided to the predetermined user.

20 Preferably the record in the database for each user comprised in the data set of step e) may be searched for at least one characteristic to determine if any of the users with a connection to the predetermined user possess the applicable characteristic.

25 Preferably the record in the database for each user comprised in the connection data of each user comprised in the data set of step e) may be searched for at least one characteristic or for a given user identifier to determine if any of the contacts of any of the users with a connection to the predetermined user possess the applicable characteristic or is the user associated with the given user identifier. This search may be extended deeper into the relationship hierarchy, for example to the connection data of users who have a very remote relationship with users in the data set of step e).

30 Preferably the results of any search for a given characteristic within the data set of step e) or the results of any search for a given characteristic or a given user identifier with the connection data of each user comprised in the data set of step e) pursuant to the foregoing paragraphs may be provided to the predetermined user.

35 Preferably users of a network system may assign themselves or agree to be assigned to one or more groups. Such groups may represent clubs, families, workplaces or any other

logical grouping of users. The user identifier and other characteristics of each member of the group will be associated with each such group.

5 Preferably each group member will be notified of the name and user identifier of each other member of the group. Such notification may be either automatic or upon the request of the group member. Such notification may occur either upon the formation of the group or at any subsequent time.

10 Alternatively, the name and user identifier of each member of the group will be delivered to the NAD of each member of the group such that each group member will be given the option of including each or all of the other group members name and user identifiers in the connection data stored on their NAD, either manually or via the assistance of an application resident on the group member's NAD.

15 Alternatively, the name and user identifier of each member of the group will be delivered to the NAD of each member of the group where such communications will be intercepted and processed by an application running on each user's NAD and the connection data stored on each group member's NAD automatically updated to include the name and user identifier of each of the other members of the group.

20 Preferably each member of the group will be notified of the name and user identifier of any member that joins or leaves the group.

25 Alternatively, the name and user identifier of any member that joins or leaves the group may be delivered to the NAD of each member of the group such that each group member will be given the option of adding or removing the name and user identifier of each such group member to/from the connection data, stored on the applicable group member's NAD either manually or via the assistance of an application resident on the group member's NAD.

30 Alternatively, the name and user identifier of each member that joins or leaves the group may be delivered to the NAD of each member of the group where an application on each NAD will intercept and process such communications such that the connection data stored on each group member's NAD is automatically updated to include/exclude the name and  
35 user identifier of each such joining/leaving group member.

Preferably each member of the group will be notified of any change in the user identifier of any member of the group.

Alternatively, the new user identifier of any group member may be delivered to the NAD of each group member such that each group member will be given the option to update the changed user identifier in the connection data stored on the group member's NAD, either manually or via the assistance of an application resident on the group member's NAD.

Alternatively the new user identifier of any group member may be delivered to the NAD of each group member where an application on each NAD will intercept and process such communications such that the connection data stored in each group member's NAD is automatically updated to include any changes to the user identifier of any other member of the group.

Preferably the present invention may be interconnected with alternative means of obtaining user identifiers and associated preferred names or identifiers (if any).

Preferably a predetermined user may request that a user identifier and associated preferred name or identifier (if any) provided to them by an alternative means be communicated to the predetermined user's NAD for incorporation in the connection data stored on the predetermined user's NAD.

Preferably the predetermined user's NAD will have an application on it that will automatically intercept such communications and assist in the insertion of any such alternative user identifiers and associated preferred names or identifiers (if any) provided to the predetermined user by an alternative means into the connection data stored on the predetermined user's NAD.

Preferably a predetermined user may be provided with any additional user identifiers that may be associated with a given user's unique user identifier where such given user is comprised in the predetermined user's connection data.

Alternatively a predetermined user may be provided with any additional user identifiers that may be associated with a given user's unique user identifier for any given user.

Preferably one or more additional user identifiers provided to a predetermined user

pursuant to the preceding paragraphs may be selected by the predetermined user for automatic insertion into the connection data in the predetermined user's NAD via the assistance of an application resident on the predetermined user's NAD.

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In a further aspect the invention may broadly be said to consist in a system for determining relationships between users of a network system and determining the relationships by executing the method of any one or more of the preceding paragraphs.

10

In a further aspect the invention may broadly be said to consist in a computer system for determining relationships between users of a network system and determining the relationships by executing the method of any one or more of the preceding paragraphs.

15

In a further aspect the invention may broadly be said to consist in software for determining relationships between users of a network system and determining the relationships by executing the method of any one or more of the preceding paragraphs.

20

In a further aspect the invention may broadly be said to consist in storage media containing software as set forth in the preceding paragraph.

In a further aspect the invention may broadly be said to consist in apparatus for determining one or more relationships between a plurality of users of a network system, the apparatus including:

25

a database populated with a unique user identifier for each of the plurality of users and with connection data for each such user,

a processor adapted to search each user's connection data in the database for a predetermined user's unique user identifier to identify all users that have the predetermined user's unique user identifier in their connection data, and

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a memory means to store (whether transiently or permanently) the user identifiers located by the search to provide a data set for the predetermined user representative of one or more other user's relationship with the predetermined user.

35

Typically the connection data for each user is provided to the database from the connection data stored on each such user's NAD. The connection data stored on a user's NAD would also include connection data that while not physically stored on the NAD is still



accessible to the user of the NAD or to applications present on the NAD, whether by use of some communications means, external storage or otherwise.

5 Preferably the apparatus allows users to specify that certain user identifiers within their connection data not be accessible to other users of the network system or be included in any processing of data undertaken by the processor. User identifiers so specified are "Blacklisted".

10 Preferably the apparatus allows a predetermined user to specify additional user identifiers that relate to the predetermined user to be associated with the predetermined user's unique user identifier. Such additional user identifiers may relate to the given network system or to any other network system. It is not necessary that the network system to which a given additional user identifier relates be interconnected with the given network system.

15 Preferably the record of a predetermined user's connection data in the database will be kept synchronised with the connection data stored in the predetermined user's NAD such that any changes to the connection data, whether originating on the NAD or from the database, and whether initiated through interaction with the present invention or  
20 independently by the predetermined user, will be communicated from one to the other. Therefore, all processing of connection data undertaken by the present invention uses current and correct data.

25 Preferably the processor is adapted to perform the step of searching the connection data stored in the database in respect of a predetermined user's unique user identifier for each user in the database and also includes searching the connection data stored in the database for any additional user identifiers associated with the predetermined user.

30 Preferably, the apparatus searches the connection data stored in other databases connected to the first database. Searching of such other databases could either be carried out directly by communication between the first database and such other databases or by communication between the first database and a centralised database and processing centre which replicates the data contained in the databases connected to it.

35 Preferably, the apparatus includes communication means to communicate the user

Identifiers comprised in the data set to the predetermined user.

Preferably, the processor may compare the user identifiers comprised in the data set with the user identifiers comprised in the connection data for the predetermined user, and the user identifiers in the data set which do not also comprise part of the connection data for the predetermined user be communicated to the predetermined user.

Preferably, the processor may compare the user identifiers comprised in the data set with the user identifiers comprised in the connection data for the predetermined user, and some or all of the user identifiers in the data set which do not also comprise part of the connection data for the predetermined user may be selected by the predetermined user for automatic insertion into the connection data stored in the predetermined user's NAD.

Preferably, the processor may compare the user identifiers comprised in the data set, with the user identifiers comprised in the connection data for the predetermined user, and the user identifiers comprised in the connection data which do not comprise part of the data set be communicated to the predetermined user.

Alternatively, the processor may compare the user identifiers comprised in the data set with the user identifiers comprised in the connection data for the predetermined user, and the user identifiers in the connection data which do not comprise part of the data set be used by the communication means to contact users whose user identifier appears in the connection data but not in the data set to invite them to include the predetermined user's user identifier in their connection data.

Preferably the predetermined user may choose which if any of the users identified in the preceding paragraph are invited to include the predetermined user's user identifier in their connection data.

Preferably users contacted in accordance with the preceding two paragraphs will have a NAD with an application present on it that will automatically intercept such invitations and manage the insertion of the predetermined user's user identifier into the connection data stored on the user's NAD, should the applicable user accept the predetermined user's invitation.

Preferably, the processor may use the size of the data set to determine and the

communications means to communicate a relative indication of a predetermined user's popularity in the network system to that user.

5 Preferably, the processor may use the aggregate connection data of users of a given network system to determine the popularity of users of an interconnected network system with users of the given network system. Such a determination may be provided to the operator of the given network system or communicated to the users of the interconnected network system.

10 Preferably, if the user identifier for a predetermined user should change, the processor may use the communications means to contact each user comprised in the data set, informing them of the change in the predetermined user's user identifier and providing them with the opportunity to update their record of the predetermined user's user identifier in the connection data stored in their NAD.

15 Alternatively, if the user identifier for the predetermined user should change, the processor may use the communications to send instructions to an application present on the NAD of each user comprised in the data set such that the record of the predetermined user's user identifier in the connection data stored in the NAD is updated automatically for each such user.

20 Preferably the predetermined user may choose which if any of the users identified in the preceding paragraphs are invited or otherwise contacted in relation to updating their record of the predetermined user's user identifier in their connection data.

25 Preferably, if a predetermined user permanently leaves the network system for any reason the processor may use the communications to contact each user comprised in the data set, informing them that the predetermined user's user identifier is no longer active and providing them with the opportunity to remove the predetermined user's user identifier from the connection data stored on their NAD.

30 Alternatively, if a predetermined user permanently leaves the network system for any reason the processor may use the communications means to send instructions to an application present on the NAD of each user comprised in the data set, such that the record of the predetermined user's user identifier in the connection data stored on the NAD is deleted for each such user.

Preferably the predetermined user may chose which if any of the users comprised in the data set are contacted in relation to the deletion of the applicable user identifier of the predetermined user from the connection data stored in their NAD.

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Preferably a user may record user identifiers that they have used previously that are presently inactive or which have been reallocated to another user of the network system on a list of inactive user identifiers for that user.

10

Preferably, if the user identifier for a predetermined user should change then the old user identifier should be included on the list of inactive user identifiers for that user.

15

Preferably during population of the database for each user the processor will determine if any of the user identifiers in the predetermined user's connection data are no longer active by reference to a list of known inactive user identifiers and communicate such inactive user identifiers to the predetermined user, providing the predetermined user with the opportunity to remove such inactive user identifiers from the connection data stored in the predetermined user's NAD.

20

Alternatively, during population of the database for each user the processor will determine if any of the user identifiers in the predetermined user's connection data are no longer active by reference to a list of known inactive user identifiers and send instructions to an application on the predetermined user's network NAD to remove the inactive user identifier's from the connection data stored in the predetermined user's NAD.

25

Alternatively, during population of the database for each user and determining if any of the user identifiers in the predetermined user's connection data are no longer active the processor will also determine, in the event that an inactive user identifier is identified, whether an alternative active user identifier is available and if so provide the predetermined user with the opportunity to substitute the active user identifier for the inactive user identifier in the connection data stored in their NAD.

30

Typically users associate a name or identifier with each of the user identifiers that comprise the user's connection data.

35

Preferably users may associate a preferred name or identifier with their own user

Identifier.

5 Preferably the processor may compare the name or Identifier associated with a predetermined user's user Identifier in the connection data for each user comprised in the data set with the predetermined user's preferred name or Identifier and use the communications means and user Identifiers specified in the data set to invite any of the users comprised in the data set that do not use the predetermined user's preferred name or Identifier in their connection data to associate the predetermined user's preferred name or Identifier with the predetermined user's unique user Identifier or additional user  
10 Identifiers in the connection data stored on their NAD.

15 Preferably the predetermined user may choose which if any of the users identified in the preceding paragraph are invited to use the predetermined user's preferred name or Identifier in the connection data stored on their NAD.

20 Preferably, users contacted in accordance with the two preceding paragraphs will have a NAD with an application present on it that will automatically intercept such invitations and assist, should the user wish to change the name or Identifier associated with the predetermined user's user identifier in their connection data to the predetermined user's preferred name or identifier, in the process of changing the name or Identifier associated with the predetermined user's user Identifier in the user's connection data to be the name or identifier preferred by the predetermined user.

25 Preferably a predetermined user may request that the preferred name or Identifier corresponding to a user identifier present in the predetermined user's connection data be communicated to the predetermined user.

30 Preferably a predetermined user making a request in accordance with the preceding paragraph will have a NAD with an application present on it that will automatically intercept such responses and assist in the process of changing the name or identifier associated with a user Identifier in the predetermined user's connection data to the preferred name or identifier communicated to the predetermined user.

35 Preferably, the record of each user in the database is further populated with one or more characteristics of each user. Characteristics may include the name and occupation of each user.

Preferably, the processor may search the record for each user in the database for one or more such characteristics to determine which users possess the characteristic or characteristics.

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Alternatively, the processor may search the connection data of users in the database for a given user identifier to determine which users have a connection to the user associated with the given user identifier.

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Preferably the processor may search the record in the database for each user comprised in the predetermined user's connection data for at least one of the characteristics to determine which, if any, of the predetermined user's contacts possess the applicable characteristic.

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Preferably the processor may search the record in the database for each user comprised in the connection data of each user comprised in the predetermined user's connection data for at least one of the characteristics or for a given user identifier to determine if any of the contacts of the predetermined user's contacts possess the applicable characteristic or is the user associated with the given user identifier. . This search may be extended deeper into the relationship hierarchy to users who have only a very remote relationship to those comprised in the predetermined user's connection data.

20

Preferably the results of any search for a given characteristic within a predetermined user's connection data or the results of any search for a given characteristic or a given user identifier within the connection data of each user comprised in the predetermined user's connection data pursuant to the preceding paragraphs may be communicated to the predetermined user.

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Preferably the processor may search the record in the database for each user comprised in the data set for at least one characteristic to determine if any of the users with a connection to the predetermined user possess the applicable characteristic.

30

Preferably the processor may search the record in the database for each user comprised in the connection data of each user comprised in the data set for at least one characteristic or for a given user identifier to determine if any of the contacts of any of the users with a connection to the predetermined user possess the applicable characteristic or

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Is the user associated with the given user identifier. This search may be extended deeper into the relationship hierarchy, for example to the connection data of users who have a very remote relationship with users in the data set .

5 Preferably the results of any search for a given characteristic within the data set or the results of any search for a given characteristic or a given user identifier within the connection data of each user comprised in the data set pursuant to the preceding paragraphs may be communicated to the predetermined user.

10 Preferably users of a network system may assign themselves or agree to be assigned to one or more groups. Such groups may represent clubs, families, workplaces or any other logical grouping of users. The user identifier and other characteristics of each member of the group will be associated with each such group.

15 Preferably the processor may use the communications means to communicate the name and user identifier of each member of the group to the other members of the group. Such communication may be either automatic or upon the request of the group member. Such communication may occur either upon the formation of the group or at any subsequent time.

20 Alternatively, the name and user identifier of each member of the group will be communicated by the processor to the NAD of each member of the group such that each group member will be given the option of including each or all of the other group members name and user identifiers in the connection data stored on their NAD, either manually or  
25 via the assistance of an application resident on the group member's NAD.

30 Alternatively, the name and user identifier of each member of the group will be communicated by the processor to the NAD of each member of the group where such communications will be intercepted and processed by an application running on each user's NAD and the connection data stored on each group member's NAD automatically updated to include the name and user identifier of each of the other members of the group.

35 Preferably the processor will communicate the name and user identifier of any member that joins or leaves the group to the other members of the group.

Alternatively, the name and user identifier of any member that joins or leaves the group may be communicated by the processor to the NAD of each member of the group such that each group member will be given the option of adding or removing the name and user identifier of each such group member to/from the connection data stored on the applicable group member's NAD, either manually or via the assistance of an application resident on the group member's NAD.

Alternatively, the name and user identifier of each member that joins or leaves the group may be communicated by the processor to the NAD of each member of the group where an application on each NAD will intercept and process such communications such that the connection data stored on each group member's NAD is automatically updated to include/exclude the name and user identifier of each such joining/leaving group member.

Preferably the processor will communicate any change in the user identifier of any member of the group to the other members of the group.

Alternatively, the new user identifier of any group member may be communicated by the processor to the NAD of each group member such that each group member will be given the option to update the changed user identifier in the connection data stored on the group member's NAD, either manually or via the assistance of an application resident on the group member's NAD.

Alternatively the new user identifier of any group member may be communicated by the processor to the NAD of each group member where an application on each NAD will intercept and process such communications such that the connection data stored on each group member's NAD is automatically updated to include any changes to the user identifier of any other member of the group.

Preferably the present invention may be interconnected with alternative means of obtaining user identifiers and associated preferred names or identifiers (if any).

Preferably a predetermined user may request that a user identifier and associated preferred name or identifier (if any) provided to them by an alternative means be communicated to the predetermined user's NAD for incorporation in the connection data stored on the predetermined user's NAD.



Preferably the predetermined user's NAD will have an application on it that will automatically intercept such communications and insert any such alternative user identifiers and associated preferred names or identifiers (if any) provided to them by an alternative means into the connection data stored on the predetermined user's NAD.

Preferably any additional user identifiers that may be associated with a given user's unique user identifier may be communicated to a predetermined user where such given user is comprised in the predetermined user's connection data.

Alternatively any additional user identifiers that may be associated with any given user's unique user identifier may be communicated to a predetermined user.

Preferably one or more additional user identifiers communicated to a predetermined user pursuant to the preceding paragraphs may be selected by the predetermined user for automatic insertion into the connection data in the predetermined user's NAD via the assistance of an application resident on the predetermined user's NAD.

In a further aspect the invention may broadly be said to consist in a computer executable method for determining one or more relationships between a plurality of users of a network system, the method including the steps of:

populating a database with a unique user identifier for each of the plurality of users, further populating the database with connection data for each such user, searching the connection data present in the database for a predetermined user's unique user identifier to identify all users that have the predetermined user's unique user identifier in their connection data, and

storing (whether transiently or permanently) the user identifiers located by the search to provide a data set for the predetermined user representative of one or more other user's relationship with the predetermined user.

Preferably the user identifier information includes a user identifier and one or more characteristics of users such as name or occupation.

In a further aspect the invention may broadly be said to consist in a method for maintaining or creating one or more relationships between a plurality of users of a network

**WHAT IS CLAIMED IS:**

1. A method for determining one or more relationships between a plurality of users of a network system, the method including the steps of:
  - a) populating a database with a unique network user identifier for each of the plurality of users,
  - b) selecting a user and further populating the database with connection data for the selected user to provide unique network user identifiers of users known to the selected user,
  - c) repeating step b) for the remainder of the plurality of users,
  - d) for a predetermined user, searching each of the plurality of user's connection data in the database for the predetermined user's unique network user identifier to identify all users that have the predetermined user's unique network user identifier in their connection data,
  - e) storing the network user identifiers of the users located by the search of step d), to provide a set of data for the predetermined user representative of one or more other user's relationship with the predetermined user, and
  - f) providing data from the data set of step e) to the predetermined user.
2. A method as claimed in claim 1 wherein step b) includes accessing the connection data on a network access device associated with the selected user.
3. A method as claimed in claim 1 or claim 2 where step d) includes searching each user's connection data in the database for any additional network user identifiers for the predetermined user.
4. A method as claimed in any one of the preceding claims including the step of comparing the data set of step e) with the connection data for the predetermined user, and providing the predetermined user with the network user identifier of any users comprised in the data set of step e) which do not comprise part of the predetermined user's connection data.
5. A method as claimed in claim 4 including the step of providing the predetermined user with the opportunity to include the network user identifiers of any users comprised in the data set of step e) which do not comprise part of the predetermined user's connection data in the predetermined user's connection

data.

- 5 6. A method as claimed in any one of the preceding claims including the step of comparing the connection data of the predetermined user with the data set of step e), and providing the predetermined user with the network user identifier of any users comprised in the connection data which do not comprise part of the data set of step e).
- 10 7. A method as claimed in claim 6 including the step of using the network user identifiers of any users comprised in the connection data which are not present in the data set of step e) to contact users whose network user identifiers are in the predetermined user's connection data but not in the data set of step e) to invite those users to include the predetermined user's network user identifier in their connection data.
- 15 8. A method as claimed in any one of the preceding claims including the step of using the data set of step e) to provide an indication of the popularity of a user of the network system.
- 20 9. A method as claimed in any one of the preceding claims including the step of determining whether a network user identifier for a predetermined user has changed, and if a change is detected, using the user identifiers comprised in the data set of step e) to contact users who have the predetermined user's network user identifier and inform those users of the change in the predetermined user's network user identifier.
- 25 10. A method as claimed in any one of the preceding claims including the steps of further populating the database with a user preferred identifier by which a predetermined user prefers to be identified and associating the user preferred identifier with the predetermined user's unique network user identifier and additional user identifiers.
- 30 11. A method as claimed in claim 10 including the step of inviting users that have a predetermined user's unique network user identifier or additional user identifiers in their connection data to associate the predetermined user's user preferred identifier with the predetermined user's unique network user identifier or additional
- 35

user identifiers in their connection data.

- 5 12. A method as claimed in any one of the preceding claims including the step of further populating the database with one or more characteristics of each user and searching the record in the database for each user comprised in the predetermined user's connection data for at least one of the characteristics.
- 10 13. A method as claimed in claim 12 including the step of searching the record in the database of each user comprised in the connection data of each user comprised in the predetermined users connection data and searching the record in the database and connection data of each user comprised in the data set of step e) and each user comprised in the connection data of each user comprised in the data set of step e) for at least one of the characteristics or for a given network user identifier or user preferred identifier.
- 15 14. A method for maintaining one or more relationships between a plurality of users of a network system, the method including the steps of:  
populating a database with a unique user identifier for each of the plurality of users,  
20 populating the database with connection data for each such user,  
further populating the database with one or more characteristics of each user, and  
searching the record in the database for each user comprised in a predetermined user's connection data for at least one of the characteristics.
- 25 15. A method as claimed in claim 14 including the step of searching the record in the database and connection data of each user comprised in the predetermined users connection data for at least one of the characteristics or for a given user identifier or user preferred identifier.
- 30 16. A method for creating or maintaining one or more relationships between a subset of users of a network system, the method including the steps of:  
populating a database with a unique user identifier for each member of such subset,  
35 further populating the database with connection data for each member of such subset, which connection data may include some or all of the user identifiers for the other members of the subset,

providing each member of the subset with the user identifier of each other member of the subset,

detecting a change in the unique user identifier or additional user identifiers of any member of the subset, and

providing the updated unique user identifier or additional user identifier to each member of the subset that has the applicable member's old unique user identifier or additional user identifier in their connection data.

17. A method as claimed in claim 16 including the step of detecting the addition of any member to the subset and providing existing members of the subset with the unique user identifier and additional user identifiers of any such new member.

18. A method as claimed in claim 17 including the step of detecting any person leaving the subset and notifying any member of the subset that has the applicable member's unique user identifier or additional user identifiers in their connection data of the same.

19. A method of creating or maintaining relationships between a plurality of users in a network system, the method including the steps of:  
populating a database with a unique user identifier for each of the plurality of users,  
further populating the database with connection data for each such user,  
associating a user preferred identifier with the unique user identifier for a predetermined user, and  
communicating the user preferred identifier to users who have the predetermined user's unique user identifier in their connection data.

20. A method as claimed in claim 19 including the step of receiving a change in the user preferred user identifier and communicating the change to users who have the predetermined user's unique user identifier in their connection data.

21. A method of determining a user value indication for a predetermined user of a network system in respect of a separate but interconnected network system, the method comprising the steps of:  
analysing the connection data of users in the applicable separate but interconnected network system in respect of for the predetermined user to

determine a popularity indication for the predetermined user with the users in the applicable separate but interconnected network system, and providing the popularity indication to the predetermined user or to the operator of the applicable separate but interconnected network system.

5  
22. A method of creating or maintaining one or more relationships between a plurality of users of a network system, the method including the steps of:  
populating a database with a unique user identifier for each of the plurality of  
10 users,  
populating the database with connection data for each such user,  
connecting external systems used as a source of contact or other data by users to the database,  
permitting users to instruct an external system to provide contact or other data from such external system to the database,  
15 including such contact or other data provided by an external system into a users connection data in the database, and  
providing such contact or other data provided by an external system to the instructing user's network access device.

20 23. A method as claimed in claim 1 including the steps of:  
further populating the database with additional user identifiers of each user, such user identifiers relating to the applicable network system or any other network system;  
enabling other users of the network system with one of a predetermined user's  
25 user identifiers to request other user identifiers from the system for the predetermined user; and  
providing such other users with a predetermined user's additional user identifiers.

30 24. A method as claimed in 1 including the step of providing a means for a predetermined user to mark some or all of their connection data as not accessible to other users of the system to the effect that it would appear to other users of the system that the marked data is not included in the predetermined user's connection data.

35 25. A method as claimed in 1 including the steps of:  
connecting databases populated with connection data to a centralised database;

populating the central database with some or all of the connection data from the connected databases;

maintaining synchronisation between the connection data in the centralised database and the connected databases; and

providing a predetermined user's connection data to that user through any of the connected databases, either for restoration to a network access device or otherwise.

26. A method as claimed in 1 including the steps of:

connecting databases populated with connection data directly with each other;  
transmitting processing requests (relating to any method as claimed in any one of the preceding paragraphs), from either a predetermined user of a connected database or a process operating on the connected database itself, to the other connected databases;

processing requests received from other connected databases;  
transmitting the results of any processing requests to the originating connected database; and

providing the aggregate results received from all connected databases to the predetermined user or process operating on the originating connected database.

27. A method as claimed in 1 including the steps of:

connecting databases populated with connection data to a central inter-operator exchange;

transmitting processing requests (relating to any method as claimed in any one of the preceding paragraphs), from either a predetermined user of a connected database or a process operating on the connected database itself to the central inter-operator exchange;

transmitting such processing requests from the central inter-operator exchange to the connected databases;

processing requests received from the central inter-operator exchange;

transmitting the results of any processing requests received from the central inter-operator exchange to the central inter-operator exchange;

transmitting results received from connected databases either individually or in aggregate from the central inter-operator exchange to the originating connected database; and

providing the aggregate results received from the central inter-operator exchange

to the predetermined user or process operating on the originating connected database.

28. A method as claimed in 1 including the steps of:

5 connecting databases populated with connection data to a central data and processing centre;  
populating the central database and processing centre with the connection data from the connected databases;  
10 maintaining synchronisation between the connection data in the central database and processing centre and the connected databases;  
transmitting processing requests relating to any method as claimed in any one of the preceding paragraphs from a predetermined user of a connected database or a process operating on the connected database itself to the central database and processing centre;  
15 processing requests received from the connected databases;  
transmitting the results of any processing requests to the originating connected database; and  
providing the results to the predetermined user or process operating on the originating connected database.

20 29. Computerised apparatus programmed to implement the method as claimed in any one of the preceding claims.

30. Apparatus for determining one or more relationships between a plurality of users of a network system, the apparatus including:

25 a database populated with a unique network user identifier for each of the plurality of users and with connection data for each such user,  
a processor adapted to search each user's connection data in the database for a predetermined user's unique network user identifier to identify all users that have the predetermined user's unique network user identifier in their connection data,  
30 and  
a memory means to store the user identifiers located by the search to provide a data set for the predetermined user representative of one or more other user's relationship with the predetermined user.